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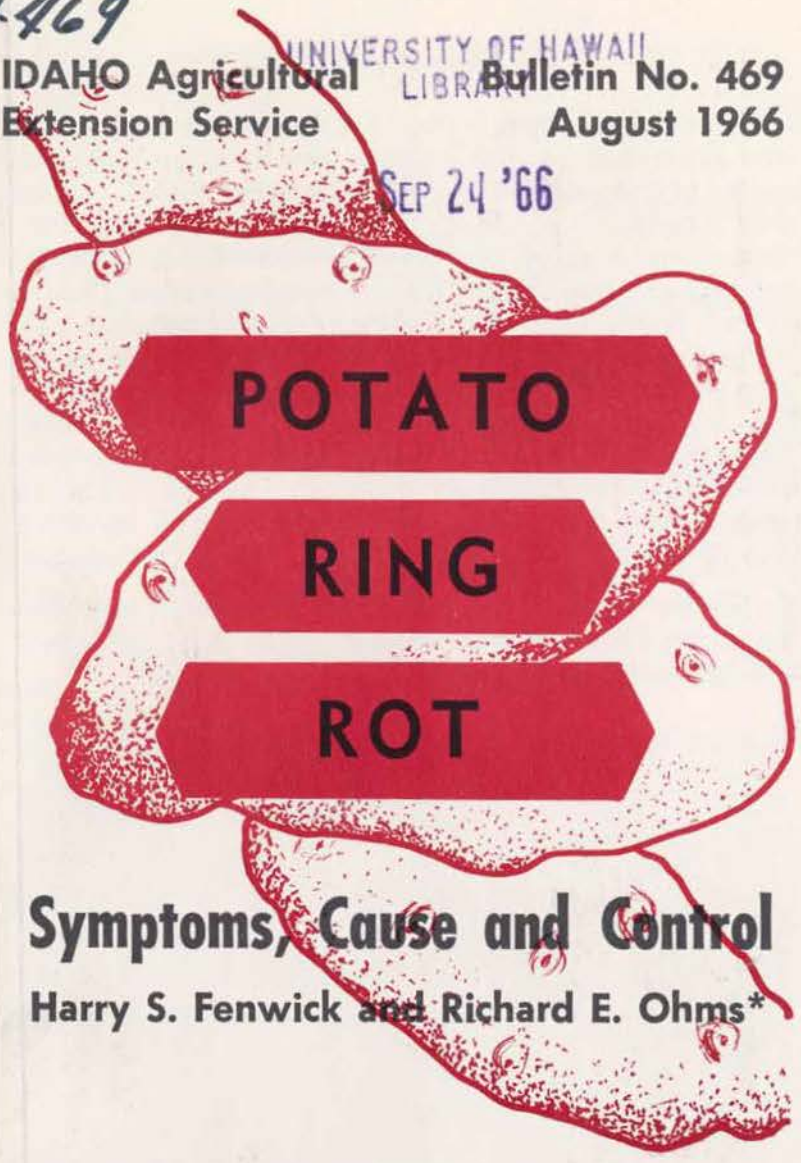
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Symptoms, Cause and Control

Harry S. Fenwick and Richard E. Ohms*

Potato ring rot caused by the bacterium **Corynebacterium sepedonicum** can be one of the most disastrous of potato diseases. The disease causes reduced yields, tuber rots, higher marketing costs, lower salable volume, loss of seed, and rejection of potatoes from certification. The cost of disinfecting all equipment and storage facilities also must be added to the loss experienced by the potato grower if his potatoes become infected with ring rot.

*Extension Plant Pathologist and Extension Potato Specialist, respectively. University of Idaho Agricultural Extension Service.



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Symptoms

Leaves and Stem — The first symptoms in the field are expressed by the leaflets, which exhibit an off-color, slight yellowing. They may be slightly rolled and mottled, and either partly or completely wilted. One or more stems per hill may be affected while the rest appear healthy. As the disease progresses, the infected plants may wilt suddenly as though they are suffering from a type of shock, Figure 1. The leaves and stems remain green for a short period after wilting. Infected plants are hard to pull out of the ground. Some plants originating from severely infected seed pieces may be extremely dwarfed. The leaves form a rosette with the leaflets rolled upward and exhibit a marginal burn. These plants usually die by mid-season.

If the stem is cut off near the seed piece and squeezed, a creamy substance oozes out instead of the normally clear plant sap.



Figure 1. Large tuber in center foreground and smaller tuber at the left show advanced stage of ring rot. They would be mushy to touch. Other tubers do not yet show obvious damage. Leaves in foreground show symptoms of ring rot infection, commonly referred to in the field as "fast wilt." Leaves in rear are not yet seriously affected.

Tubers — Infected tubers vary in appearance from those that appear healthy to those that are badly infected. The first symptom in the tuber is a light yellow discoloration in the vascular ring. In more advanced stages the color is more deeply yellow with tinges of brown and has a cheesy consistency. If the tuber is squeezed, this discolored cheesy substance will ooze out from the area around the ring, (Fig. 2). Badly infected tubers often show cracking on the skin, or portions of the tuber may be completely rotted. Tubers may appear to be sound at harvest time but will begin to break down in storage. Some tubers appear to be sound after being stored all winter.

Perpetuation of Ring Rot

The disease causing bacteria live from season to season chiefly in tubers, but will remain alive in the dried slime on grading, planting and harvesting equipment, sacks, storage bins, cutting knives, etc. Ring rot does not live through the winter in the soil itself, but it can over-winter in infected potatoes left in the ground which come up as volunteer plants the following season.

The primary source of tuber to tuber spread is from contaminated machinery and cutting knives. The bacteria enter the potatoes through wounds.

Table 1. Suggested materials to use in preventing or cleaning up ring rot. All the materials listed below are capable of destroying the ring rot bacteria if properly used.

Chemical	Amounts to use		
	10 gallons	50 gallons	100 gallons
Quaternary Ammonium Roccal, Hyamine, etc. 10% solutions	1.6 cups	2 qts.	1 gal.
Chlorine Chlorox, Purex, B-K, etc. 5% solution	1 gal.	5 gal.	10 gal.
Lysol 50% solution in soap	1 gal.	5 gal.	10 gal.
Formaldehyde 40% solution	3.2 cups	2 gal.	4 gal.
*Copper sulfate	2 lb.	10 lb.	20 lb.

*Copper sulfate should be used for disinfecting storage facilities only.

Control Recommendations

To Avoid Ring Rot

1. Plant only certified seed.
2. Disinfect all potato equipment with live steam or a chemical. See Table 1.
3. Disinfect storage facilities. See Table 1.
4. Avoid lending and borrowing potato equipment.

To Clean Up Ring Rot

1. Dispose of all the affected lot.
2. Clean all equipment with soap and water, then disinfect **all** potato equipment with live steam or a chemical. See Table 1.
3. Disinfect storage facilities. Remove all soil, potato refuse, sacks, etc. from cellar prior to disinfecting. If the cellar floor is dirt, remove 2-3 inches of soil, then disinfect. See Table 1.
4. Sterilize or destroy all sacks used in handling potatoes.
5. Plow up volunteer plants that grow from the affected lot.

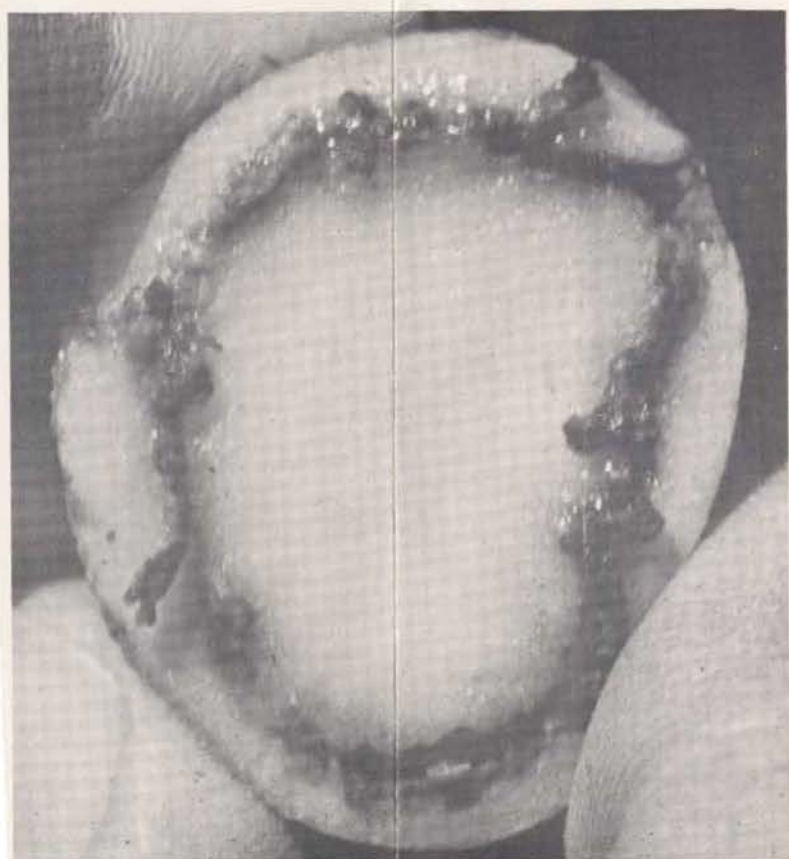


Figure 2. Advanced stage of ring rot shown by dark colored vascular ring. When squeezed, a dark cheesy substance oozes from the area around the ring.

PESTICIDE RESIDUES: The grower is responsible for chemical residues on his crops as well as for problems caused by drift from his property to other properties or crops. Recommendations in this bulletin are based upon the best information currently available. Read labels carefully with respect to dosage, levels, number of applications and minimum interval between application and harvest.